

The 1906 Quake Ignites a New Era



G.K. Gilbert, 1906

Main fault at the Skinner Ranch, one mile west of Olema, looking northwest. . . . The fault passes under the barn to the right of center. While the main part of the barn remained on its foundation, the shed on the right was dragged 15 feet due to the San Francisco earthquake.

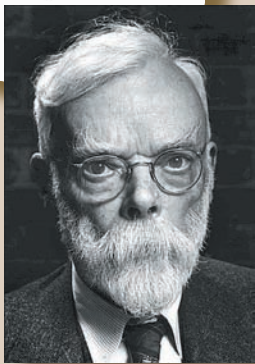
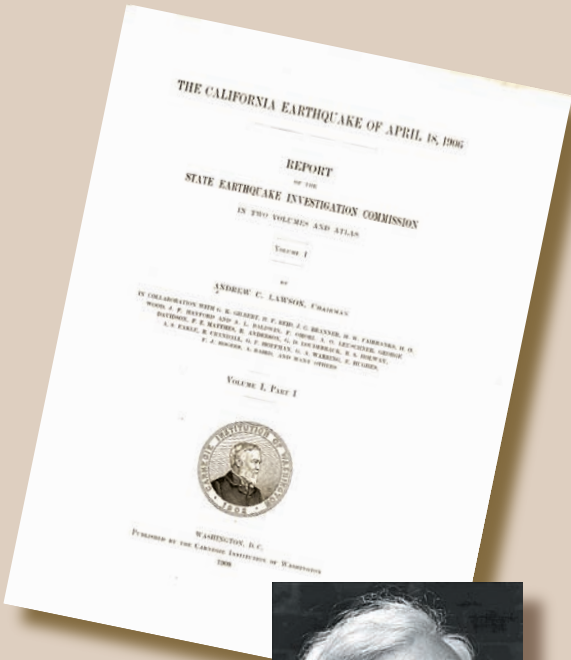
Lawson Report, 1908

Clues in the Landscape

Before 1906, our knowledge of earthquakes was incomplete. Seismographs at U.C. Berkeley and Mount Hamilton’s Lick Observatory had recorded earthquake activity in California since 1887. Scientists relied largely on clues in the landscape to draw conclusions about the underlying geology. This type of observation led Andrew Lawson to identify the San Andreas fault in 1895. Straight lines on the earth’s surface are not a normal sight. Lawson knew that the long narrow valleys and parallel coastal mountain ranges that characterize the local landscape were indicators of a bigger geologic story. He concluded that a fault running parallel to the coastline must be shaping the landscape. Lawson correctly assessed the local geology, but he and his contemporaries had neither experienced the San Andreas Fault in motion nor seen the immediate effects of its movement.

Unanswered Questions

The devastating 1906 earthquake ignited fires of scientific inquiry as geologists throughout California began studying the earthquake and its effects. Most confounding was the length of the surface rupture. The earthquake caused a crack in the earth’s surface from San Juan Bautista in central California north to Cape Mendocino, a distance of nearly 300 miles. Geologists observed that the land on the west side of the rift jumped to the north/northwest as much as 20 feet in some places. Having no experience with an event of this magnitude, scientists were mystified. At the time of the 1906 quake, scientists though earthquakes caused faults, rather than vice versa. A deeper understanding of the significance of faults and the offset resulting from earthquakes required more than 60 years of study and the advent of the theory of plate tectonics.



G. Paul Bishop 1950

Professor Andrew C. Lawson (1861-1952), chairman of the geology department at the University of California, Berkeley, led the State Earthquake Investigation Commission. The commission, formed by Governor George C. Pardee, included geologists and astronomers from Stanford University, the Lick Observatory, the Chabot Observatory in Oakland, University of California, Johns Hopkins University and the U.S. Geological Survey. The 1908 report was the first integrated, government-commissioned scientific investigation into earthquakes in the U.S. No California funds were available to support the effort, so funding was provided by the Carnegie Institution of Washington.

Examining the Evidence

To unify the work of the scientific community, a State Earthquake Investigation Commission was established. Funded by the Carnegie Institute of Washington, this was the first integrated, government-commissioned, scientific investigation into earthquakes. By hiking virtually the entire length of the earthquake rupture, scientists discovered where and how much the fault had slipped. They worked tirelessly, documenting structural damage, reviewing seismograph records, and making detailed observations about the underlying geology in Northern California. Scientists conducted triangulation surveys to measure the surface displacement. The detailed report of their findings is commonly referred to as the Lawson report. This document includes extensive photographs and maps of the extensive damage and underlying geology and became the foundation for future monitoring. Today it is an invaluable record against which geologic change since 1906 can be compared.